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Adequacy of the Diets of Pregnant Teenagers: Educational, Nutritional and Socioeconomic Factors.

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ADEQUACY OF THE DIETS OF PREGNANT TEENAGERS: EDUCATIONAL, NUTRITIONAL AND SOCIOECONOMIC FACTORS

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ABSTRACT

The adequacy of the diets of 51 pregnant teenagers, 18 years of age and under, was determined from the intakes of 10 specific nutrients estimated from twenty-four hour diet recalls. The diets were classified as adequate, somewhat adequate and inadequate. The relationships between the adequacy of the diet and certain educational, nutritional and socioeconomic factors were investigated. Data were derived from interviews. The services of the Acadia and St. Landry Parish Health Units and of the Lafayette Charity Hospital were utilized to locate the subjects for the study.

In testing the relationship of the adequacy of the diets in terms of a number of educational, nutritional and socioeconomic factors, none were found to be significant at the .05 level of confidence by the use of the chi-square test. The analysis of data with respect to three factors (the decision to continue their education, occupation of the fathers and living arrangements) did show observed frequencies close enough to the expected frequencies to indicate possible basic relasionships.

The dietary information revealed that 39 girls were taking nutrient supplements. The diets classified as somewhat adequate and inadequate were low in calcium, protein and vitamins A, C, B_{12} and B_6. The meals consumed by the teenagers were prepared by themselves, their mothers, relatives, husbands and others. Pica, which is the eating of clay or other non-food materials, was

admitted by only eight girls. Twenty-four, 47 percent of these adolescents, all of whom had less than an adequate diet, omitted one of the three usual daily meals. Over 50 percent of the families involved received food stamps.

Although the educational levels of the subjects varied, the majority had obtained a ninth or tenth grade education. Forty-four girls had elected at least one home economics course. Ironically, all of those electing more than one or two years of this subject had inadequate diets. Other sources of nutrition information or education named in descending frequency were elementary school classes, secondary health and science classes, 4-H Clubs, prenatal clinics and miscellaneous instruction. The formal educational levels of the mothers ranged from none to high school graduation. The majority of these teenagers were planning to continue their education.

The low socioeconomic level of the girls was evidenced by the prevailing blue-collar type occupation of the fathers. However, some fathers were disabled, some received public assistance and some were deceased. The living arrangements of these girls were diverse; the majority lived with only one parent.

This investigation showed that pregnancy was not related to a special age, race or environment. These young pregnant women were disadvantaged relative to education, nutrition and socioeconomic background.

This research indicated the need for nutrition education that would bridge the gap between knowledge and application in order to improve the nutritional status of pregnant teenagers.

Chapter 1

THE PROBLEM AND ITS SETTING

The nutritional status of the adolescent girl at the time of conception is representative of her lifelong nutritional experience and is a critical determinant of her reproductive performance. A well balanced diet during pregnancy is important to the health of the mother as well as to the fetus. Although "in any population of pregnant women the number of very young girls is likely to be small," according to the National Academy of Science, "few complete studies of the nutritional status of adolescents during pregnancy have been made in the United States" (Baizermen and others, 1971).

Early childbearing created problems for the parents, their families and society (Consortium on Early Childbearing and Childrearing, 1973). Medically, pregnant teenagers were often susceptible to greater risk, if not directly because of age, at least because of poor nutritional habits and failure to obtain medical care until late in pregnancy.

Expectant mothers in their teens had needs and problems different from those of women over 20 years of age. Poor food habits among these girls were a cause for concern on the part of those persons who were interested in nutrition. Perhaps nutrition

education can make contributions that will help teenagers, especially pregnant ones, to improve their diets. Food intake will likely be little different during pregnancy unless there is input of nutritional information from some source. Hopefully, those girls who have had some nutrition education will recognize the relation between the food they eat and their health.

The ability of teenagers to select diets suitable for pregnancy and identification of certain factors relative to the adequacy of their diets should give evidence that changes are needed in the area of nutrition education. These changes could serve to increase the effectiveness of nutrition education and to improve the diets of this segment of the population.

THE PROBLEM

Statement of the Problem

The problem of this study was to assess the nutritional adequacy of the diets of a group of pregnant teenagers, and to study the adequacy of these diets in terms of the factors listed below:

1. Educational - number of years of school completed, number of years of home economics instruction, access to other sources of nutrition education, level of education of the mother and future educational plans of the pregnant teenagers.

2. Nutritional - food assistance received, whether services of a nutrition aide were obtained, the persons who prepared meals for the pregnant teenagers, ingestion of a nutrient supplement and the practice relating to ingestion of non-food items.

3. Socioeconomic - age, race, number of pregnancies, occupation of the fathers and living arrangements of the pregnant teenagers.

IMPORTANCE OF THE STUDY

During the last decade, scholars, human services professionals and the general public have shown increased interest and concern about pregnant teenagers. According to the Consortium on Early Childbearing and Childrearing (1973:2) "it has been estimated, based on national information on births, that one out of every 10 girls in the United States will become a mother while still of school age."

The State of Louisiana has taken a forward look and has proposed a course of action. In January, 1974, the Louisiana School Boards Association passed "Resolution No. 12", calling for the establishment of Family Living Courses which its members believed essential to attack serious problems of public health: increasing incidences of veneral disease, in numbers of pregnant minors and in numbers of abortions (The Boardman, 1974).

Information from many sources has shown that there are high educational, health and social risks when young teenagers become mothers while still of school age. Not only are pregnant teenagers

at an educational disadvantage, but they are also health risks. The pregnant teenager is more likely to have complications during pregnancy and delivery, and is also more likely to have a low-birth-weight baby who may not completely recover from this handicap.

Certain social risks are also involved. Although the young mother may be married by the time the baby is born, the divorce rates for the group are three to four times as high as for any other age group. Further, young mothers who are forced to drop out of school too often fall victim to unemployment and welfare dependency.

Teenagers who become parents, in many cases, are not in a position to complete their education. The opportunity for further education that is necessary in a highly competitive society is often lacking for all but a few who were fortunate to come from families in high income brackets.

According to Baizerman and others (1971), attempts are being made in almost 200 cities and towns to do something about pregnancy in adolescence. Many of these endeavors are multi-service programs. Possibly the school, through its teachers of nutrition, could provide some assistance for these pregnant teenagers by emphasizing diet which could aid in eliminating some of the health risks to which pregnant teenagers are susceptible.

SCOPE AND LIMITATIONS

This study was designed to examine the adequacy of the diets of pregnant teenagers in terms of various educational, nutritional and socioeconomic factors.

The participants were limited to pregnant teenagers, 18 years of age and under, residing in the Louisiana parishes of Acadia, Lafayette and St. Landry. These adolescents were those receiving assistance through the parish health units or through the Lafayette Charity Hospital Out-Patient Clinic.

To determine the adequacy of the diets of the pregnant teenagers the intakes of the following nutrients were used: protein, vitamins A, B_6, B_{12}, niacin, thiamine, riboflavin and ascorbic acid; and iron and calcium. The 1974 revision of the Recommended Dietary Allowances (Appendix A) was the criterion for the adequacy of the nutrient intake. The dietary intakes were limited to those foods ingested during the twenty-four hour period prior to personal interviews with each of the pregnant teenagers.

The educational, nutritional and socioeconomic factors were limited to those named earlier in the Statement of the Problem.

PROCEDURES USED IN THE STUDY

A diet record sheet was developed to provide the information required in the Statement of the Problem (Appendix B). Permission was obtained from the Acadia and St. Landry Parish Health Units

and from Lafayette Charity Hospital to collect information from pregnant teenagers receiving their services.

Interviews were conducted by the investigator using the "Dietary Record of Pregnant Teenagers" (Appendix B). Each of the pregnant teenagers was assisted in determining accurate amounts of the food portions consumed during the twenty-four hour diet recalls. Commercially prepared food models were used for this purpose. Each interview lasted about 30 minutes.

Information on the questionnaires was transferred to IBM Code Sheets, which included the identification number, age and race of each participant; and the identification number for each of the foods included in the diet recall, the number of times the food was consumed during the twenty-four hour interval and the weight of the food portion in grams. The weight of the food in grams was estimated from the Nutritive Value of Foods (U. S. Department of Agriculture, 1971). The nutritional values of the diet recalls were calculated using the computerized program based on the "Extended Table of Nutrient Values," developed under the direction of Dr. P. E. Schilling (Moore, Goodloe and Schilling, 1974).

The diets of the pregnant teenagers were grouped according to total nutrient intake, including supplements, into three categories: adequate, somewhat adequate and inadequate. For this investigation, an adequate diet was one in which the nutritive value equaled or exceeded the Recommended Dietary Allowance (RDA) for each of the ten selected nutrients. A somewhat adequate diet

was one in which the nutritive value of the twenty-four hour diet provided less than the RDA for one or more of the ten selected nutrients, but supplied two-thirds of the RDAs for all of the ten nutrients. An inadequate diet was one in which the nutrient intake of the twenty-four hour diet fell below two-thirds of the RDA for any one or more of the ten selected nutrients. The basis for this classification of the diets was Food Consumption of Households by Money Value of Food and Quality of Diet United States, North, South (U. S. Department of Agriculture, 1972).

The educational, nutritional and socioeconomic factors stated in the problem were studied for each of the three groups. Differences were computed and statistical procedures were applied. The .05 level of confidence was used in testing the null hypothesis.

The findings were summarized, conclusions were drawn and recommendations were made.

DEFINITIONS OF TERMS USED

Nutrient

Nutrients are the various components present in food which are necessary for life. Although there are many chemical entities in food, only a small group of organic and inorganic compounds are essential.

Recommended Dietary Allowances

These are "the levels of intake of essential nutrients considered, in the judgment of the Food and Nutrition Board on the

basis of the available scientific knowledge, to be adequate to meet the known needs of practically all healthy persons" (Food and Nutrition Board, Recommended Dietary Allowances, 1974:2).

Vitamins

Vitamins are chemically unrelated organic substances; they are grouped together because each is essential in the diet in minute amounts, and each is required for specific metabolic reactions within the cell (Pike and Brown, 1967:46).

Vitamin A or Retinol

This is a fat soluble compound necessary for life and growth. One specific function, a role in vision, has been elucidated.

Other Fat Soluble Vitamins

These include vitamins D, E and K. Vitamin D is vital for bone formation and calcium absorption. The essentiality of vitamin E has been proven experimentally with animals. Vitamin K functions in the synthesis of prothrombin.

Vitamin B-Complex

These compounds are necessary for all living matter. They are known to take part in enzyme systems which are responsible for chemical changes which take place in living cells. Included in this group are thiamin, niacin, riboflavin, biotin, pyridoxine, folacin, pantothenic acid and B_{12}.

Vitamin C or Ascorbic Acid

This vitamin is necessary for the formation and maintenance of collagen and other intercellular substances. It is a reducing agent also and in this role may protect organic compounds as well as affect the absorption of essential minerals.

Minerals

These are the elements in addition to carbon, hydrogen, oxygen and nitrogen which are supplied by food. They may exist in organic compounds or as soluble salts. Minerals give rigidity to the skeleton and also play specific roles in the formation of hemoglobin. Mineral salts in solution affect muscle contraction, transfer of materials through cell membranes and many other vital processes. Two minerals often consumed in less than adequate amounts are calcium and iron.

Protein

This nutrient is the main organic constituent of cells, as well as antibodies, enzymes, many hormones and other body compounds. The protein molecule is made up of various combinations of 20 amino acids. These smaller compounds cannot be synthesized by higher animals, however, some may be formed from others. The relative amounts of certain amino acids affects the quality of a food protein.

Fats or Lipids

These compounds are made up of glycerole and fatty acids. They furnish more than twice as much energy per unit of weight than do carbohydrates and protein.

Carbohydrates

The various carbohydrates are made up of one or more simple sugars. They are synthesized by plants and are the main source of energy in human diets.

Chapter 2

REVIEW OF RELATED LITERATURE

During the decade prior to this investigation, there was an increased interest and concern about pregnant teenagers. Some of this concern was shown in the literature published about teenage pregnancy. Many of those articles described the magnitude and kinds of problems resulting from teenage pregnancy.

Of the literature reviewed, only the research studies conducted by Seiler and Fox (1973) and King and co-workers (1972) were related enough to be cited in this investigation.

Some articles described the problems of teenage pregnancy and others included education, age, income and education of the parents of pregnant teenagers, sources of nutrition education and nutrition during pregnancy.

THE PROBLEM OF TEENAGE PREGNANCY

Yurdin, (1970), of the National Council on Illegitimacy reported that the national illegitimacy rates for teenagers were increasing even though they were leveling off for other age groups. He further predicted that the number would reach 403,000 by the year 1980. In 1968, 48 percent of the illegitimate births were to teenagers.

The total number of pregnancies occurring in teenagers in this country was impossible to determine. The only reliable figures available were those from live births which were not indicative of the total population concerned.

Walters (1969) reported on a population of patients, aged 11-16, served by the Grady Memorial Hospital in Atlanta, Georgia. The teenage patients were characterized as primarily urban, indigent, unwed and Negro. The young pregnant teenagers were further characterized by the staff as representative of a syndrome of failure.

Findings in Baltimore showed more than 800 pregnancies per year for school-age adolescents in a city of 900,000 population with resulting high frequency of premature births and infant mortality to mothers 16 years and under (Stine and others, 1964). Adolescents were found to obtain prenatal care later than older women. The neonatal death rate in instances when the mother received no prenatal care was found to be three times greater than when she received it. Wallace (1965) also found teenage expectant parents a high risk group from health, social, psychological, educational and vocational points of view. Teenage marriages were the most fertile, and the resulting pregnancies were clearly of consequence to the parents' educational and vocational opportunities as well as to their chances for a prosperous and happy life.

The educational progress of a student nearly always was interrupted or stopped when pregnancy occurred. Many school systems had policies that prohibited pregnant women from attending school; some discouraged their return to school after delivery. Even when permitted to return, a large percentage of those girls who kept their babies were forced to find someone else to care for them during school hours.

Pregnant teenagers suffered social isolation and thus lost identity with their reference group. Pregnancy frequently meant rejection by family, peers and teachers, a situation aggravated by the policy of many high schools of expelling pregnant students from school (Hobart, 1962). Without support from any reference group, the pregnant teenager was likely to lose interest in her appearance, health and future. Webster and others (1965) found that disruption of social ties could have damaging effects, and this circumstance was compounded by feelings of shame, fear, anxiety and guilt about the delivery of the baby as well as uncertainty about the future.

Walters (1969) suggested even further consequences of teenage pregnancy: the combination of interrupted or unfinished schooling plus the burden of motherhood at such an early age led to other failures such as the inability to establish a stable family life or to become self-supporting.

Oppel and Royston (1971) compared 86 mothers who gave birth at age 18 or under with 86 mothers who delivered at age 18 or older. He also studied the physical, social and psychological characteristics of the children born to both groups of mothers from birth to age 10. The children of the mothers 18 years of age and under were described as more outgoing, dependent and distractable. In addition, these children were lower in IQ and more deficient in reading as related to grade level than were their counterparts. These children were also more likely to be underweight and shorter than those children whose mothers were 18 years or older at the time of delivery.

Most suggestions for programs concentrated on comprehensive care, with continued education, medical care, social service and psychological service. Kelly (1963) pointed out the importance of the school in coordinating services and directing teenagers.

EDUCATION

Traditionally, schools have dealt with pregnancy by excluding girls from school. Some schools have provided home instruction, some have permitted girls to attend night classes or to receive instruction through adult education. Very few school systems have permitted the pregnant teenager to remain in their regular classes or have provided them with equal schooling elsewhere. Additionally, many school systems have not been eager to have these girls return to school after childbirth.

Clark (1971) selected 20 girls at random from the Iona Whipple Home in Washington, D. C., a domicile for pregnant girls, and interviewed them to determine how successful they had been without special educational facilities. The patients were 14 years of age or older and came from lower socioeconomic levels. Only 4 of the 20 girls were able to continue their education. Of the entire group, only one girl had been able to maintain a job which paid over $3,000 per annum.

Although there were about 200 multiservice programs for pregnant teenagers in this country during the last decade, very few had been evaluated as to their "effectiveness" (Baizerman and others, 1971). Of those that had been evaluated, few of the studies had been published.

The first, and most likely the best known, evaluative study was done by Marion Howard (1968) at the Webster School in Washington, D. C. The goal of the program there was to provide prenatal care and counseling for those with personal problems. Some findings from this study indicated that Webster was effective in promoting re-entry in school following childbirth. It was also found that the older the student was at first pregnancy, the more likely she was to continue in school.

Another evaluative study was conducted at the Edgar Allen Poe School in Baltimore, Maryland (Stine and Kelly, 1970). It reported the difference between the morbidity and mortality rates in infants born to mothers attending the special school and of

those rates born to a control group. These investigators found fewer low birth weight babies born to the mothers enrolled at the school. Longer gestation periods were noted for these same mothers. Infant mortality was also discovered to be much lower for those mothers enrolled in the school.

AGE

In 1960 there were, in the United States, about 6.5 million women, aged 15-19. In 1970, the number of women in this group increased to 9.4 million and predictions for 1977 were for 10.4 million (Consortium on Early Childbearing and Childrearing, 1973:4). The Consortium on Early Childbearing and Childrearing, (1973:10) found that of all teenage births in the 1960's, an estimated 34 percent were to women still in school. The teenage women were noted to have their children in rapid succession.

Israel and Deutscheberger (1964) conducted a study of 22,201 pregnant women of low socioeconomic status. The study revealed that one-fourth of the group were under 19 years of age. According to these authors, the relationship of the mother's age to obstetric performance showed that 14 and 15 year old teenagers were the greatest obstetrical risks. The Committee on Maternal Nutrition (Maternal Nutrition and the Course of Pregnancy, 1970) concluded that girls who became pregnant while they were 17 years of age and under were more susceptible to hurt, both physically and psychologically.

Research by Israel and Woutersz (1963) on 3,995 teenage pregnancies (under age 20) was compared with 40,709 total deliveries at 10 institutions comprising the Obstetrical Statistical Cooperative. These institutions were located in the states of Massachusetts, New York, Pennsylvania and Maryland and served six communities. There were no differences distinguished by these researchers between the two groups in fetal, neonatal and perinatal mortality. They further suggested that teenagers are no greater obstetrical risks than other women.

Israel and Deutscheberber (1964) did affirm that age may affect the course of pregnancy as well as the welfare of the progeny. They further concluded that the best age for childbearing was between 18 and 25 years of age.

INCOME AND EDUCATION OF PARENTS

Dietary intakes of 65 pregnant women in a New England college town were reported by Murphy and Wertz (1954). The results showed that the adequacy of the diet increased with the woman's education. A definite relationship was found between the adequacy of the mother's diet and social level manifested by the husband's occupation.

Hinton and others (1963) studied the food practices of 140 girls 12 to 14 years of age. The results showed that girls with better diets tended to come from the highest of three social-status classifications. Conversely, the girls with poorer diets tended to

come from families in the lowest social-status class. In this study, social-status classification included two components: the prestige of the father's occupation (which was related to income) and the educational level of both parents. Most of the girls came from middle class families where income was probably a less important factor than educational level as an influence on the quality of the diet.

SOURCES OF NUTRITION EDUCATION

Seventy-five percent of the mothers from all income levels in the North Central Regional Project (Fox and others, 1970) had attended organized classes on nutrition. The primary sources of this instruction were junior and senior high schools with youth organizations; elementary schools and prenatal classes contributing to a lesser degree. Public health or adult education was mentioned by less than three percent. Information relative to the family's food values were obtained from the mothers or some other relative and from physicians. Lay sources appeared to account for much of such information among the mothers of preschool children, Sanjur and Scoma (1971) found that 69 percent of 149 low-income mothers obtained their food knowledge from mothers or relatives.

NUTRITION AND TEENAGE PREGNANCY

Whatever the causes, girls who became pregnant when they were less than 17 years of age were at great biological and psychological risk. These females still growing and developing physically at the time of the reported study, had nutritional requirements greater than those of mature women. When the needs of pregnancy were added to the needs of growth, the pregnant teenager was likely to have a decreased growth potential and increased risk in pregnancy (Committee on Maternal Nutrition, 1970:139).

The Committee on Maternal Nutrition of the National Research Council further suggested that the teenager's diet in this country tended to be low in calcium, ascorbic acid and iron. The tendency to form poor food habits was more pronounced among persons from low income groups.

In a study of 861 pregnant teenagers, McGanity and co-workers (1969) found that the adolescents had poor intakes of iron, calcium, vitamin A and low levels of plasma vitamin A, ascorbic acid and urinary riboflavin.

Seiler and Fox (1973) compared the diets of a group of pregnant teenagers to those of nonpregnant teenagers. The results indicated that based on the 1968 RDAs, calcium, iron and vitamin A were the required nutrients which were least adequately supplied by foods eaten by 50 percent or more of both groups.

In research by King and co-workers (1972), one-third of the pregnant youngsters failed to take mineral supplements. These authors concluded that pregnant teenagers did not like to take medication, particularly if the purpose of these medications were not fully explained.

LIVING ARRANGEMENTS

Some pregnant teenagers are not free to choose their foods on their own; their diets are determined by others with whom they live.

Of the studies cited, only two dealt with living arrangements. King and associates (1972) found the living arrangements of the girls were diverse. Only six lived in homes of their own, others lived with families, relatives, friends or under other conditions which did not enable them to choose their diets. Anderson (1973) indicated that pregnant teenagers who attended Moorhead Area Learning Center lived at home with parents, husbands, relatives, in mutual service homes arranged by social service agencies or in maternity homes.

SUMMARY

The research has shown that teenage pregnancy was not peculiar to a special age, level of education or socioeconomic status even though the girls studied were most frequently disadvantaged. The years of adolescence represented a poor time

for pregnancy from an educational, nutritional and socioeconomic frame of reference. Many pregnant teenagers left school because of pregnancy, some for financial reasons and others because of rules or regulations prohibiting school attendance. Many of these girls, as a result of their habits, had nutritional deficiencies. The greater nutritional needs of adolescents, added to the stress of pregnancy, often resulted in prenatal and neonatal complications. The negative attitude of society toward teenage pregnancy was costly in terms of low earnings and great emotional stress.

Chapter 3

PRESENTATION AND ANALYSIS OF DATA

Fifty-one pregnant teenagers, 16 white and 35 black, 14 through 18 years of age were the participants in this investigation. Nine of these girls attended the weekly Maternity Clinic in the Acadia Parish Health Unit in Crowley, Louisiana. Twenty of these pregnant teenagers went to the Out-Patient Clinic for the mothers-to-be, at Lafayette Charity Hospital in Lafayette, Louisiana. The remaining 22 girls obtained aid from the Maternity Clinics conducted by the St. Landry Parish Health Unit. Fourteen went to the parish health unit in Opelousas, Louisiana, and the other eight attended its auxiliary branch in Eunice, Louisiana.

DIETARY INFORMATION

Of the 51 pregnant teenagers, 8 had an adequate diet; 12 had a somewhat adequate diet; and 31 had an inadequate diet. Thirty-nine of the pregnant teenagers ingested a nutrient supplement, including all of the 8 with an adequate diet, 11 of the 12 with a somewhat adequate diet, and 20 of the 31 with an inadequate diet. In summary, 31 (approximately 61 percent) of the girls had inadequate diets and 20 (approximately 39 percent) had either adequate or somewhat adequate diets. Further, 19 (approximately 95 percent)

of the 20 girls with adequate or somewhat adequate diets ingested a dietary supplement. Only 20 (approximately 65 percent) of the 31 with inadequate diets ingested a nutrient supplement.

Twenty-one of these teenagers were taking a routinely prescribed prenatal capsule from the health units in Acadia and St. Landry Parish; 4 were ingesting One-A-Day vitamins; and 14 were using the supplement dispensed by the Lafayette Charity Hospital.

From the group of inadequate diets, the nutrients which were consumed amounts in less than two-thirds of the RDAs were calcium, protein and vitamins A, B_{12}, B_6 and C. The findings from the deficiency of these nutrients, with the exception of the B vitamins, were in accord with the reported results of other research (Committee on Maternal Nutrition, 1970; McGanity and others, 1969 and Seiler and Fox, 1973).

The data for the diets of these 51 pregnant teenagers were based on a twenty-four hour recall of food intake. The methodology of a recall of food intake almost always was confined to a twenty-four hour period and it provided a qualitative rather quantitative description of dietary patterns. Wide variation between the subjects was to be expected and the inadequacies were representative of the group and not the individual. Furthermore the accuracy of the respondent was not a certainty. The respondents may have omitted or embellished the information given either due to a lack of memory or as an attempt to provide the answers desired by this interviewer.

ADEQUACY OF DIET AND RACE

Table 1 shows the relationship of the adequacy of the diet to the race of the pregnant teenager. Six white and 2 black girls had an adequate diet, 4 white and 8 black girls had a somewhat adequate diet and 6 white and 25 black pregnant teenagers had an inadequate diet. Thus, 6 white girls (12 percent) of the 51 had an inadequate diet while 25 (49 percent) of the black girls had an inadequate diet.

Table 1

Type of Diet of Pregnant Teenagers in Terms of Race

Race	Type of Diet			Totals
	Adequate	Somewhat Adequate	Inadequate	
White	6	4	6	16
Black	2	8	25	35
Totals	8	12	31	51

The chi-square test revealed that there was no significant relationship at the .05 level of confidence between race and adequacy of diet.

ADEQUACY OF DIET AND AGE

Table 2 depicts the relationship between adequacy of the diet and age among the population studied. The youngest teenager was 14 years of age and the oldest one was 18. The 14 year old pregnant teenager had an inadequate diet, as did 12 girls in the 15 to 16 year old group and 18 girls aged 17 or 18 years.

Table 2

Type of Diet of Pregnant Teenagers in Terms of Age

Age in Years	Type of Diet			Totals
	Adequate	Somewhat Adequate	Inadequate	
13-14 years	0	0	1	1
15-16 years	1	5	12	18
17-18 years	7	7	18	32
Totals	8	12	31	51

Five girls ages 15 to 16 had a somewhat adequate diet and seven in this same diet pattern were 17 to 18 years of age. From the group with an adequate diet, one girl was in the 15-16 year old group and seven were in the 17-18 year old group.

The 17-18 year old category had, by far, more numerous pregnant teenagers, with a total of 32 as compared with 18 in the 15-16 year old category and the lone one in the 13-14 year old

group. There were undoubtedly a number of reasons why there were more subjects in the 17-18 year old group than in the 15-16 year old group, and more in the 15-16 year old group than in the 13-14 year old group. Perhaps one of the most important reasons was that social patterns limit the opportunity for sexual contacts. The 13-14 year olds are more limited than the 15-16 year old group, usually, and the 15-16 year olds more limited than the 17-18 year olds. Biologically, some 13-14 year old girls are not capable of conception.

The chi-square test failed to reveal a significant relationship at the .05 level of confidence between the adequacy of the diets of pregnant teenagers and their ages.

ADEQUACY OF DIET AND LEVEL OF EDUCATION COMPLETED

The level of education completed by the pregnant teenagers ranged from below grade 6 through grade 12. This information is found in Table 3. One teenager who had a somewhat adequate diet had completed less than six grades of school.

A total of 12 girls had gone as far as the seventh or eighth grade. Of this number, one had an adequate diet, three had a somewhat adequate diet and eight girls had an inadequate diet.

The largest number of these pregnant teenagers, 23, had completed grades nine or ten. Thirteen of this group had an inadequate diet, six had a somewhat adequate diet and four had an adequate diet.

Table 3

Type of Diet of Pregnant Teenagers in Terms of Level of Education Completed

Level of Education	Type of Diet			Totals
	Adequate	Somewhat Adequate	Inadequate	
Grades 1-6	0	1	0	1
Grades 7-8	1	3	8	12
Grades 9-10	4	6	13	23
Grades 11-12	3	2	10	15
Totals	8	12	31	51

Fifteen pregnant teenagers had completed grades 11 or 12. Of this number, 3 girls had an adequate diet, 2 more had a somewhat adequate diet and 10 had an inadequate diet.

The largest number of pregnant teenagers included in this study, 23, had completed grades nine or ten with the number completing the preceding and succeeding grades of about equal numbers. The chi-square test failed to reveal a significant relationship at the .05 level of confidence between the adequacy of the diet of pregnant teenagers and the level of education completed.

ADEQUACY OF DIET AND YEARS OF HOME ECONOMICS INSTRUCTION ELECTED

Part of the home economics curriculum long has dealt with food and nutrition. In this area students learned to plan, prepare and serve adequate meals for the family and for themselves. In recent years greater emphasis has been placed on nutrition as one way to improve family living. It is reasonable to assume that only when a person becomes convinced that what he eats makes a difference will he begin to inquire what foods are best for him. Then, and only then, will a difference result in dietary patterns regardless of the exposure he has had to the basic principles and concepts of nutrition whether in the home, school or elsewhere.

Table 4 shows the dietary patterns and years of home economics instruction the pregnant teenagers had elected. Forty-four, or all but seven, of these girls had taken at least one year of said instruction.

Among the mothers-to-be with an adequate diet, one had not yet elected any of this instruction, two girls had elected one year and four more girls had taken two years. Only one girl with this diet pattern had elected more than two years of home economics.

Two pregnant teenagers with an inadequate diet had elected five years of home economics instruction; two of this same diet category had enrolled in four years of the instruction. Fourteen more girls had elected at least one year of home economics instruction while five had not elected any.

A total of 31 elected one or more years of home economics instruction, while 13 more girls elected from three to five years of this part of the school curriculum. However, the chi-square test failed to show a significant relationship between the years of home economics instruction elected and the adequacy of the diet of the pregnant teenager at the .05 level of confidence.

Table 4

Type of Diet of Pregnant Teenagers in Terms of Years of Home Economics Instruction Elected

Years of Home Economics Instruction Elected	Type of Diet			Totals
	Adequate	Somewhat Adequate	Inadequate	
0 Years	1	1	5	7
1 Year	2	4	14	20
2 Years	4	3	4	11
3 Years	1	4	4	9
4 Years	0	0	2	2
5 Years	0	0	2	2
Totals	8	12	31	51

ADEQUACY OF DIET AND OTHER SOURCES OF NUTRITION EDUCATION

Table 5 indicates that the pregnant teenagers had received nutrition education from sources other than the home economics program. Most of this nutrition education came from the elementary

school. Sources named less frequently were secondary science classes, secondary health classes, prenatal instruction, 4-H Club and other sources, in descending order of frequency.

Table 5

Type of Diet of Pregnant Teenagers in Terms of Other Sources of Nutrition Education

Source	Type of Diet			Totals
	Adequate	Somewhat Adequate	Inadequate	
Elementary School	7	6	21	34
High School Science	4	4	12	20
High School Health	5	4	20	29
4-H Club	2	3	7	12
Other	0	2	6	8
Prenatal Instruction	4	5	9	18

Seven pregnant teenagers with an adequate diet, 6 more with a somewhat adequate diet and 21 with an inadequate diet had received some nutrition education during the elementary school years. Thus a total of 34 pregnant teenagers had been introduced to nutrition early in their school programs.

High school science classes were also designated as contributors to nutrition education. Four pregnant teenagers with an adequate diet and four with a somewhat adequate diet had received

nutrition information from this source. Twelve girls with an inadequate diet indicated science classes as a means of nutrition information.

Twenty-nine of the pregnant teenagers named the high school health classes as another source of nutrition education. Of this number, 5 had an adequate diet, 4 had a somewhat adequate diet and the remaining 20 had an inadequate diet.

Twelve of the participants had been in the 4-H Club and had gained nutrition information from this experience. Two of the 12 had an adequate diet, 3 had a somewhat adequate diet, and the other 7 had an inadequate diet.

Eight pregnant teenagers, two with a somewhat adequate diet and six with an inadequate diet, designated "other" sources of nutrition information. Some of these sources included Future Homemakers of America activities, Girl Scouts and similar organizations.

Fifty of the 51 pregnant teenagers were utilizing the maternity services of the agencies described earlier, yet only 18 girls indicated that they were receiving prenatal instruction that included nutrition information. Of these 18 girls, 4 had an adequate diet, 5 had a somewhat adequate diet and 9 had an inadequate diet.

It is reasonable to assume that many of the pregnant teenagers had received nutrition education from several different areas within the total school program, including home economics. An additional thirty-five percent had received nutrition information through a maternity clinic.

Due to the nature of the multiplicity of the responses from many of the pregnant teenagers, the chi-square test was not applied to determine the significance of the difference between the adequacy of the diets of the pregnant teenagers and other sources of nutrition education.

CONSUMPTION OF UNUSUAL AND OF NON-FOOD ITEMS

Special cravings are often associated with and reported during pregnancy, from unusual amounts of food to pica. Pica is the ingestion of non-food items. The pregnant teenagers were asked if they consumed the following non-food items: baking powder, baking soda, clay, wood, paper or laundry starch. The staff at the clinics emphasized this practice as being unhealthy for both the mother and the baby. Possibly, for this reason, some pregnant teenagers did not admit a practice for which they had been corrected.

However, eight of the pregnant teenagers admitted ingesting baking powder, baking soda or clay. One girl with a somewhat adequate diet consumed baking powder; another ingested clay; and still another ingested baking soda. From the group of pregnant teenagers with an inadequate diet, three ingested baking powder and two ingested baking soda. None of the pregnant teenagers admitted eating wood, paper or laundry starch.

ADEQUACY OF DIET OF PREGNANT TEENAGERS AND EDUCATION OF THEIR MOTHERS

Most would agree that a girl's mother exerts more influence on her choice of diet than does the father. For this reason, only the education of the mother was included in this investigation.

Table 6 shows that four mothers of these pregnant teenagers had not received any formal education. All of their daughters had an inadequate diet. Also among this group of teenagers with an inadequate diet were 13 mothers who had an education of sixth grade or below, 3 who had gone on to grades seven or eight, 7 who had ninth or tenth grade educations and 4 who had gone as far as the eleventh or twelfth grade in school.

The education of the mothers of those daughters with a somewhat adequate diet was as follows: none without any formal schooling, seven with sixth grade or below, two with seventh or eighth grade, two with ninth or tenth grade and one with an eleventh or twelfth grade education.

Arranged in terms of their daughters' diet patterns, the educational level of the mothers of the pregnant teenagers with an adequate diet was the lowest of the three, a finding that was unexpected. None of the mothers of this group of girls had failed to receive some formal education, five had one to six years and three mothers had seven to eight years of education.

Not one of these mothers, however, had gone past the eighth grade. It was possible that this group of mothers, whose daughters had an adequate diet, had continued their education on their own. One can learn about nutrition from reading, listening to the radio or television and reading labels of food products, to mention only a few ways that could have been utilized. However, there was no certain explanation for the fact.

Table 6

Type of Diet of Pregnant Teenagers in Terms of the Education of Their Mothers

Years of School	Type of Diet			Totals
	Adequate	Somewhat Adequate	Inadequate	
0 Years	0	0	4	4
1-6 Years	5	7	13	25
7-8 Years	3	2	3	8
9-10 Years	0	2	7	9
11-12 Years	0	1	4	5
Totals	8	12	31	51

The chi-square test showed no significant relationship at the .05 level of confidence between the education the mother had received and the adequacy of her daughter's diet.

PLANS FOR FURTHER EDUCATION

One may assume that it is desirable for the pregnant teenager to continue to pursue her education after delivery. As indicated in Table 7, over half of these pregnant teenagers indicated that they would continue their education after the termination of pregnancy. Of the 33 adolescents who had made this decision, six had an adequate diet, seven had a somewhat adequate diet and 20 had an inadequate diet.

Table 7

Type of Diet of Pregnant Teenagers in Terms of the Decision to Continue Education after Delivery

Decision	Type of Diet			Totals
	Adequate	Somewhat Adequate	Inadequate	
Yes	6	7	20	33
No	1	4	11	16
Undecided	1	1	0	2
Totals	8	12	31	51

Sixteen, at this time, reported that they had no plans to continue their education. Eleven of this group had an inadequate diet, while four more girls had a somewhat adequate diet and one had an adequate diet.

Two pregnant teenagers, one with a somewhat adequate diet and one with an adequate diet, had not made up their minds about future educational plans.

The chi-square test applied did not reveal a significant relationship at the .05 level of confidence between plans for further education and the adequacy of the diet.

ADEQUACY OF DIET AND SOCIOECONOMIC STATUS

The socioeconomic status representative of this group of pregnant teenagers was designed to be determined by the occupation of the fathers of the girls. All 51 pregnant teenagers and their families were from the lower socioeconomic class.

The occupation of the fathers may be seen in Table 8. None was in a role of management, ownership or professional.

One teenager could not give any information about the occupation of her father, consequently, the total number for this table is 50 rather than 51.

Many of the fathers were unskilled workers involved in such occupations as laborer or janitor. Twelve men were included in this category. Three of their daughters had an adequate diet, three more had a somewhat adequate diet and six had an inadequate diet.

Nine more fathers were considered semi-skilled, and were employed in job categories such as plumber's helper and worker in a canning factory. One of their daughters had an adequate diet, two more had a somewhat adequate diet and six had an inadequate diet.

Table 8

Type of Diet of Pregnant Teenagers in Terms of Their Fathers' Occupations

Occupation	Type of Diet			Totals
	Adequate	Somewhat Adequate	Inadequate	
Unskilled	3	3	6	12
Semi-skilled	1	2	6	9
Skilled	2	2	6	10
Agriculture	1	1	3	5
Disabled	0	2	3	5
Deceased	1	2	6	9
Totals	8	12	30	50

Ten of the fathers of the pregnant teenagers were skilled workers. The diets of their daughters were the same as for the daughters of the semi-skilled workers with exception that two had an adequate diet in the place of only one.

Five fathers had jobs related to agriculture. One of the daughters of the men in this category had an adequate diet, one had a somewhat adequate diet and three had an inadequate diet.

Five fathers did not work because they were disabled. The diet patterns of their daughters were similar to those whose fathers were in jobs related to agriculture. However, none in this classification had an adequate diet, and two had a somewhat adequate diet.

Nine of the pregnant teenager's fathers were deceased. Among the daughters of these persons, one girl had an adequate diet, two had a somewhat adequate diet and six had an inadequate diet.

Statistical analysis by the chi-square test did not show a significant relationship at the .05 level of confidence between the adequacy of the diet of the pregnant teenager and her father's occupation. This finding may be due in part to the inaccuracy of the description of the father's occupation by the pregnant teenager and to the difficulty of classifying some of the jobs.

FOOD ASSISTANCE RECEIVED

Many families from the lower socioeconomic levels receive some type of food assistance, such as food stamps, food commodities or the services of a nutrition aide. Many of the families of the girls included in this study received such aid. It was assumed that some of these pregnant teenagers or their families were eligible for food assistance, but for various reasons had not availed themselves of it.

The nutrition aide worked through the parish home demonstration agent and actually went into the homes of these families to provide assistance with planning, purchasing and preparing meals.

Table 9 includes data relative to this assistance. Only six of the pregnant teenagers or their families had received guidance from a nutrition aide. One of these six had an adequate diet, two had a somewhat adequate diet and three had an inadequate diet.

Table 9

Type of Diet of Pregnant Teenagers in Terms of Food Assistance Received

Type of Assistance	Type of Diet			Totals
	Adequate	Somewhat Adequate	Inadequate	
Food Stamps	4	5	18	27
Commodities	0	0	0	0
Nutrition Aide	1	2	3	6
Totals	5	7	23	33

Over half of the group of 51 pregnant teenagers, 27, received food stamps. Eighteen from this group had an inadequate diet, five had a somewhat adequate diet and four had an adequate diet.

The data collected did not show a significant relationship at the .05 level of confidence between the adequacy of the diet of pregnant teenagers and food assistance received.

ADEQUACY OF THE DIET AND LIVING ARRANGEMENTS

The living arrangements of the pregnant teenagers were categorized in terms of persons with whom they shared residences; one parent (either one parent was deceased or one had remarried), both parents (the natural parents of the pregnant teenager), husband or other (with friends, relatives, boy friend or alone). This information is found in Table 10.

Table 10

Type of Diet of Pregnant Teenagers in Terms of Living Arrangements

Person Residing With	Type of Diet			Totals
	Adequate	Somewhat Adequate	Inadequate	
1 Parent	2	5	15	22
Both Parents	1	2	4	7
Husband	3	3	7	13
Other	2	2	5	9
Totals	8	12	31	51

The largest number of the pregnant teenagers lived with one parent; and in many cases, it was the mother alone. Of these 22 girls, 2 had an adequate diet, 5 had a somewhat adequate diet and 15 had an inadequate diet.

Only seven of the pregnant teenagers lived with both parents. Of this number, one had an adequate diet, two had a somewhat adequate diet and four had an inadequate diet.

Thirteen of these adolescents resided with their husbands. Three, each, had an adequate diet or a somewhat adequate diet, and seven of this number had an inadequate diet.

The remaining nine pregnant teenagers had diverse living arrangements: five had an inadequate diet and two, each, had an adequate diet and a somewhat adequate diet.

An analysis of these data by the chi-square test did not show a significant relationship at the .05 level of confidence between the adequacy of the diet of pregnant teenagers and living arrangements.

ADEQUACY OF DIET AND PERSON PREPARING THE MEALS

Most of the breakfast meals for the pregnant teenagers were prepared by the girls themselves or by their mothers, as may be seen in Table 11. Of 34 who fixed their own breakfast, 18 had an inadequate diet, 8 had a somewhat adequate diet and 8 others had an inadequate diet. The mothers prepared breakfast for two of the

pregnant teenagers with a somewhat adequate diet and one with an inadequate diet. Fourteen of these pregnant teenagers did not eat breakfast, and this figure included 12 girls with an inadequate diet and 2 with a somewhat adequate diet. One could hardly expect anyone, pregnant or not, to have an adequate diet if he failed to eat breakfast or either of the other two daily meals.

Table 11

Type of Diet of Pregnant Teenagers in Terms of Person Preparing Breakfast

Person	Type of Diet			Totals
	Adequate	Somewhat Adequate	Inadequate	
Self	8	8	18	34
Mother	0	2	1	3
No Breakfast	0	2	12	14
Totals	8	12	31	51

Table 12 shows the person preparing the noon meal for the pregnant teenagers. Among those girls who had an adequate diet, two prepared their own noon meals, three ate food prepared by relatives, one, each, had food prepared by a friend or husband, and one pregnant teenager bought her noon meal.

Of those pregnant teenagers with a somewhat adequate diet, the number of girls and the person preparing the food were as follows: two, self; three, relatives; one, friend; five, mother; and one bought meal.

Table 12

Type of Diet of Pregnant Teenagers in Terms of Person Preparing the Noon Meal

Person	Type of Diet			Totals
	Adequate	Somewhat Adequate	Inadequate	
Self	2	2	5	9
Relative	3	3	8	14
Friend	1	1	1	3
Mother	0	5	7	12
Bought	1	1	2	4
School Lunch	0	0	4	4
Husband	1	0	0	1
No Noon Meal	0	0	4	4
Totals	8	12	31	51

The following persons prepared meals for those pregnant whose diets were defined as inadequate: five prepared their own noon meal; eight ate food cooked by relatives; one had something

fixed by a friend; seven ate mother's cooking; two bought their meals and four, each, ate at school or did not eat a noon meal.

A total of 17 pregnant teenagers prepared their night meals. Of this number, one had an adequate diet, six had a somewhat adequate diet and ten had an inadequate diet as shown in Table 13.

Mothers prepared the night meal for 11 pregnant teenagers: 3 had an adequate diet, 2 had a somewhat adequate diet and 6 had an inadequate diet.

Table 13

Type of Diet of Pregnant Teenagers in Terms of Person Preparing the Night Meal

Person	Type of Diet			Totals
	Adequate	Somewhat Adequate	Inadequate	
Self	1	6	10	17
Mother	3	2	6	11
Relative	2	2	8	12
Bought	0	0	2	2
Friend	1	0	1	2
Husband	1	0	0	1
No Night Meal	0	2	4	6
Totals	8	12	31	51

Relatives cooked meals for 12 of the pregnant teenagers. Of this number, two had an adequate diet, two others had a somewhat adequate diet and the remaining eight had an inadequate diet.

Only 2 of the 51 pregnant teenagers bought her night meal and both of these girls had an inadequate diet. One husband prepared the night meal for his wife, and she had an adequate diet.

Six pregnant teenagers did not eat night meals: of these, two had a somewhat adequate diet and four had an inadequate diet.

Altogether, 24 persons omitted 1 of the 3 usual daily meals, and all but 4 of these persons were from the group of girls with an inadequate diet. Conversely, none of the girls with an adequate diet omitted a meal. Very few of the meals were purchased; a fact which might well be attributed to the limited income of the girls and their families.

Statistical procedures applied did not reveal a significant relationship at the .05 level of confidence between the adequacy of the diet of the pregnant teenagers and the persons preparing the meals.

PREVIOUS PREGNANCIES

Of this group of 51 pregnant teenagers, 45 were primigravidas. Of the six who had been pregnant before, one had an adequate diet, one had a somewhat adequate diet and four had an inadequate diet. The six who had experienced previous pregnancies were among the older girls included in the study; they represented both races.

In this chapter, the writer presented data regarding the diets of the pregnant teenagers used as participants in this investigation. Data from 51 pregnant teenagers, 16 white and 35 black, were presented and analyzed.

Selected educational, nutritional and socioeconomic information was supplied by the pregnant teenagers. The data thus obtained then were studied and analyzed to determine relationships which might exist.

Chapter 4

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Data were obtained from interviews with 51 white and Negro pregnant teenagers who were 14 through 18 years of age. Certain education, nutritional and socioeconomic information was collected. The diets of these girls were separated into three categories based upon the RDAs of the National Research Council for 10 selected nutrients. The categories were labeled adequate, somewhat adequate and inadequate. Only six of these girls had been pregnant previously.

In testing the differences in the adequacy of the diets of the pregnant teenagers in terms of a number of educational, nutritional and socioeconomic factors, none were found to be significant at the .05 level of confidence by the use of the chi-square test. The analysis of data with respect to three factors (the decision to continue their education after delivery, occupation of the fathers and living arrangements) did show frequencies close enough to the expected frequencies to indicate possible basic relationships.

DIETARY INFORMATION

The dietary information revealed that all but 12 of the pregnant teenagers were taking a nutrient supplement. The supplement was not, in many cases, sufficient to overcome other inadequacies of the diet. The ingestion of the nutrient supplements was included in the calculation of total dietary intake because they supplied nutrients in addition to those furnished by the diet alone.

Those diets that did not meet the criteria described earlier for the adequacy category, supplied less than the RDAs for the following nutrients: calcium, protein and vitamins A, C, B_{12} and B_6. Certain non-food items, baking powder, baking soda and clay, were consumed by eight of the pregnant teenagers.

These girls ate food prepared by a number of persons. The breakfast meals for the pregnant teenagers were prepared by either the mother or the girl herself. However, 14 girls, almost one-third, did not eat breakfast and thereby missed one of the opportunities to include the necessary or desirable sources of nutrients.

The majority of the noon and night meals were prepared in the home. The meals consumed by the pregnant teenagers with an adequate diet were most often prepared by someone other than the mother.

Four of the pregnant teenagers were still in school, as indicated by the fact that the school lunch was reported as a source of preparation for the noon meal. Four girls did not eat a noon meal and six more did not consume a night meal. All of the 24 pregnant teenagers who failed to include three meals for the twenty-four hour period had less than an adequate diet. In fact, all but two had an inadequate diet. None of the girls with an adequate diet omitted a meal.

Over half of the group of pregnant teenagers or their families received some type of food assistance. Six had received the services of a nutrition aide. Even though many of the families received food stamps, their diets were still less than adequate. Apparently this additional aid in obtaining food did not improve their selection of food in terms of those nutrients needed for an adequate diet. Additional information from the agencies dispensing food stamps might assist the pregnant teenager to select food which provide the most nutrients and the most economy.

EDUCATION

The educational levels of the pregnant teenagers were varied. One had less than a sixth grade education while others had graduated from high school. The majority of these girls had obtained a ninth or tenth grade education.

All but seven of the girls had elected one or more home economics courses, the range being from one to five years. Ironically, those girls who reported the most years of this instruction had the poorest diets.

Nutrition education also came from sources other than the home economics program and included elementary grades, secondary science and health classes, 4-H Club, prenatal instruction and miscellaneous media. The majority of the pregnant teenagers had been exposed to nutrition education while in school, however, they did not apply the information in selecting their own diets.

The educational level of the mothers of the pregnant teenagers ranged from none to through the eleventh or twelfth grade, with over half of the mothers receiving less than a sixth grade education. It is reasonable to assume that the mother's lack of nutrition knowledge contributed to the inadequacy of the diets of their daughters, especially for those girls whose education was also limited.

Thirty-three of the pregnant teenagers were planning to continue their education after the births of their babies. All but two girls had made a decision related to this part of their future. These 33 girls appeared to recognize the importance of continuing their education.

SOCIOECONOMIC FACTORS

The occupations of the fathers of the pregnant girls were varied, but none were managers, owners of business or professionals. Some were disabled, some were the recipients of public assistance and nine of the fathers were deceased. It was evident that the pregnant teenagers and their families were in the lower socioeconomic levels. This fact suggests that limited income might be a significant contributing factor to the inadequacy of their diets.

The living arrangements of the teenagers were diverse. The majority of them lived with one parent. Among the group of teenagers with an adequate diet, five, or more than sixty percent, lived with someone other than the parents.

Finally, the data presented in this investigation might serve to remind educators that this less fortunate segment of society is in need of additional services.

RECOMMENDATIONS

The data from this study suggest that pregnant teenagers are in need of assistance with their diets. Some possible ways to provide this assistance follow.

1. A conference on nutrition education could be scheduled for the parishes of Acadia, Lafayette and St. Landry. It should be planned and convened by educators, nutritionists, social workers and others in this area interested in the nutrition of pregnant

teenagers. These persons should determine ways of combining and coordinating current efforts and should formulate new ways of helping this disadvantaged portion of society.

2. The quality of nutrition education could be improved. This investigation revealed that the majority of the pregnant teenagers had received nutrition education from several sources, but still had not applied it to their own diets. Nutrition education should be realistic, motivative and innovative. Materials and methods should emphasize the application of nutrition as well as the knowledge of nutrition.

3. Nutrition educators should emphasize the wise selection of food as the means of achieving an adequate diet in place of the routine ingestion of a nutrient supplement. This investigation revealed that over seventy-five percent of the pregnant teenagers were ingesting a nutrient supplement. During pregnancy additional nutrients may be recommended for some, but complete dependence on nutrient supplements, with little regard for dietary intake, should be discouraged and eliminated if possible.

4. Nutrition educators should stress the importance of consuming all of the three usual daily meals to help provide an adequate diet. This study indicated that the pregnant teenagers omitted meals, most frequently breakfast; this practice is prohibitive to the consumption of an adequate diet.

5. Nutrition educators should encourage more judicious use of food stamps as a means of attaining an adequate diet. Many of the pregnant teenagers who had access to food stamps had less than an adequate diet. Better selection and wiser purchase of foods could help to provide more nutritious meals.

6. Additional research is needed to explore the relationship of the diets ingested by pregnant teenagers and such factors as: miscarriages, live and still births; length of gestation period; assessment of nutritional status by use of blood and urine samples; weight and length of new borns; complications of delivery; dysfunction and abnormalities of new borns and weight gain of the gravida.

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APPENDIX A

FOOD AND NUTRITION BOARD, NATIONAL ACADEMY OF SCIENCES NATIONAL RESEARCH COUNCIL RECOMMENDED DAILY DIETARY ALLOWANCES,[a] Revised 1974

Designed for the maintenance of good nutrition of practically all healthy people in the U.S.A.

	Age	Weight		Height		Energy	Protein	Fat-Soluble Vitamins				Water-Soluble Vitamins							Minerals					
								Vitamin A Activity		Vitamin D	Vitamin E Activity[e]	Ascorbic Acid	Folacin[f]	Niacin[g]	Riboflavin	Thiamin	Vitamin B_6	Vitamin B_{12}	Calcium	Phosphorus	Iodine	Iron	Magnesium	Zinc
	(years)	(kg)	(lbs)	(cm)	(in)	(kcal)[b]	(g)	(RE)[c]	(IU)	(IU)	(IU)	(mg)	(μg)	(mg)	(mg)	(mg)	(mg)	(μg)	(mg)	(mg)	(μg)	(mg)	(mg)	(mg)
Infants	0.0–0.5	6	14	60	24	kg × 117	kg × 2.2	420[d]	1,400	400	4	35	50	5	0.4	0.3	0.3	0.3	360	240	35	10	60	3
	0.5–1.0	9	20	71	28	kg × 108	kg × 2.0	400	2,000	400	5	35	50	8	0.6	0.5	0.4	0.5	540	400	45	15	70	5
Children	1–3	13	28	86	34	1,300	23	400	2,000	400	7	40	100	9	0.8	0.7	0.6	1.0	800	800	60	15	150	10
	4–6	20	44	110	44	1,800	30	500	2,500	400	9	40	200	12	1.1	0.9	0.9	1.5	800	800	80	10	200	10
	7–10	30	66	135	54	2,400	36	700	3,300	400	10	40	300	16	1.2	1.2	1.2	2.0	800	800	110	10	250	10
Males	11–14	44	97	158	63	2,800	44	1,000	5,000	400	12	45	400	18	1.5	1.4	1.6	3.0	1,200	1,200	130	18	350	15
	15–18	61	134	172	69	3,000	54	1,000	5,000	400	15	45	400	20	1.8	1.5	2.0	3.0	1,200	1,200	150	18	400	15
	19–22	67	147	172	69	3,000	54	1,000	5,000	400	15	45	400	20	1.8	1.5	2.0	3.0	800	800	140	10	350	15
	23–50	70	154	172	69	2,700	56	1,000	5,000		15	45	400	18	1.6	1.4	2.0	3.0	800	800	130	10	350	15
	51+	70	154	172	69	2,400	56	1,000	5,000		15	45	400	16	1.5	1.2	2.0	3.0	800	800	110	10	350	15
Females	11–14	44	97	155	62	2,400	44	800	4,000	400	12	45	400	16	1.3	1.2	1.6	3.0	1,200	1,200	115	18	300	15
	15–18	54	119	162	65	2,100	48	800	4,000	400	12	45	400	14	1.3	1.1	2.0	3.0	1,200	1,200	115	18	300	15
	19–22	58	128	162	65	2,100	46	800	4,000	400	12	45	400	14	1.4	1.1	2.0	3.0	800	800	100	18	300	15
	23–50	58	128	162	65	2,000	46	800	4,000		12	45	400	13	1.2	1.0	2.0	3.0	800	800	100	18	300	15
	51+	58	128	162	65	1,800	46	800	4,000		12	45	400	12	1.1	1.0	2.0	3.0	800	800	80	10	300	15
Pregnant						+300	+30	1,000	5,000	400	15	60	800	+2	+0.3	+0.3	2.5	4.0	1,200	1,200	125	18+[h]	450	20
Lactating						+500	+20	1,200	6,000	400	15	80	600	+4	+0.5	+0.3	2.5	4.0	1,200	1,200	150	18	450	25

[a] The allowances are intended to provide for individual variations among most normal persons as they live in the United States under usual environmental stresses. Diets should be based on a variety of common foods in order to provide other nutrients for which human requirements have been less well defined. See text for more detailed discussion of allowances and of nutrients not tabulated. See Table 1 (p. 6) for weights and heights by individual year of age.

[b] Kilojoules (kJ) = 4.2 × kcal.

[c] Retinol equivalents.

[d] Assumed to be all as retinol in milk during the first six months of life. All subsequent intakes are assumed to be half as retinol and half as β-carotene when calculated from international units. As retinol equivalents, three fourths are as retinol and one fourth as β-carotene.

[e] Total vitamin E activity, estimated to be 80 percent as α-tocopherol and 20 percent other tocopherols. See text for variation in allowances.

[f] The folacin allowances refer to dietary sources as determined by *Lactobacillus casei* assay. Pure forms of folacin may be effective in doses less than one fourth of the recommended dietary allowance.

[g] Although allowances are expressed as niacin, it is recognized that on the average 1 mg of niacin is derived from each 60 mg of dietary tryptophan.

[h] This increased requirement cannot be met by ordinary diets; therefore, the use of supplemental iron is recommended.

APPENDIX B

DIETARY RECORD OF PREGNANT TEENAGERS

1. Check the last grade you completed in school: 6 ___, 7 ___, 8 ___, 9 ___, 10 ___, 11 ___, 12 ___

2. Check the grade(s) in which you took home economics: 7 ___, 8 ___, 9 ___, 10 ___, 11 ___, 12 ___

3. Check the source(s) from which you have received nutrition education: elementary grades ___, high school science classes ___, high school health classes ___, 4-H Club ___, other ___, explain _____

4. What is the last grade your mother completed in school? _____

5. Do you plan to return to school? _____ If you have graduated, do you have any future educational plans? _____ If so, what? _____

6. Do you or your family receive food stamps? _____ Food commodities? _____ Has a woman ever come into your home to give information about selecting, buying or preparing food? ___

7. Do you ever eat starch? ___ baking soda? ___ baking powder? ___ clay? ___ wood? ___ paper? ___

8. Do you take vitamin pills? _____ If so, explain what kind _____

9. What is your age? _____ Your race? _____

10. What is your father's occupation? _____

11. Check the person(s) with whom you live: both parents ___, mother ___, father ___, husband ___, someone else ___ explain whom _____

12. Is this your first pregnancy? _____ If not, how many times have you been pregnant before? _____

Date: _____ Number: _____

GENERAL DIRECTIONS: Remember to write down everything you ate and drank from the time you got up yesterday morning until the time you got up this morning. You don't have to record the amount of water you drank. Please remember to include the extras, such as: sugar or milk on cereals, margarine, butter, or jelly on bread or toast, frosting on cake, soda pop, kool-aid, vitamin pills and so on.

TIME PERIOD	KIND OF FOOD AND DRINK	AMOUNT CONSUMED
Breakfast		
Who prepared this meal? _____		
Between breakfast and noon meal		
Noon meal		
Who prepared this meal? _____		

Between noon and evening meal

Evening meal

Who prepared this meal? _____

Between evening meal and bedtime

After going to bed and before getting up next morning

VITA

Nan Wells Chachere Singleton was born in Prescott, Arkansas. Although a native of Arkansas, she never attended school in that state.

After attending a total of twelve elementary and secondary schools all located in Texas and Louisiana, she was graduated with honors at the Arcadia, Louisiana, High School in 1947.

She completed the requirements for a Bachelor of Science Degree from Louisiana Tech University in 1950. Her undergraduate work included a major in home economics and a minor in science.

She earned a Master of Arts Degree in Supervision and Administration from the University of Southwestern Louisiana in 1962.

She was employed continuously as a home economics teacher in St. Landry Parish from 1950 to 1974, first at Arnaudville High, then at Grand Prairie High and finally at Opelousas Senior High School.

She is the mother of three children: Larry, Barbara and Jon Scott Chachere.

EXAMINATION AND THESIS REPORT

Candidate: Nan Chachere Singleton

Major Field: Education

Title of Thesis: ADEQUACY OF THE DIETS OF PREGNANT TEENAGERS: EDUCATIONAL, NUTRITIONAL AND SOCIOECONOMIC FACTORS

Approved:

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Major Professor and Chairman

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Date of Examination:

October 14, 1974